

REMARKS

The Applicants appreciate the Examiner's care in preparing the final Office Action, and also appreciate the Examiner's willingness to discuss the present Application on July 2, 2002. In that telephone conference, the Examiner indicated that he would not be able to consider additional arguments/amendments by the Applicants filed subsequent to the final Office action without a filing of a Request for Continued Examination by the Applicants. However, the Examiner also indicated that the filing of a Request for Continued Examination might provide the Examiner with an opportunity to further consider the Application and, possibly, result in a finding of additional allowable subject matter.

The Examiner set forth several grounds of rejection in the Office Action. In particular, the Examiner maintained his earlier rejection (from the previous Office Action) of claims 1, 4-5, 7-12, 14-17, 19 and 21 under 35 U.S.C. § 103(a) as being unpatentable over Rice et al. (U.S. Pat. No. 6,188,203) in view of Yamaguchi (Japanese patent document no. 404000907). The Examiner additionally maintained his earlier rejection of claims 6 and 20 under 35 U.S.C. § 103(a) as being unpatentable over Rice et al. in view of Yamaguchi and Denaci (U.S. Pat. No. 5,844,383), maintained his earlier rejection of claim 2 under 35 U.S.C. § 103(a) as being unpatentable over Rice et al. in view of Yamaguchi and Ashley et al. (U.S. Pat. No. 5,521,809), and maintained his earlier rejection of claims 3 and 18 under 35 U.S.C. § 103(a) as being unpatentable over Rice et al. in view of Yamaguchi and ordinary skill in the art. The Examiner further stated, as in the previous Office Action, that with regard to claims 4, 5, 8-9 and 11-13 "it should be emphasized that 'apparatus claims must be

structurally distinguishable from the prior art'" (despite indicating that claim 13 was allowable).

REJECTIONS UNDER 35 U.S.C. § 103(a)

In the Applicants' Second Amendment filed on January 16, 2002, the Applicants responded to the Examiner's rejections of the claims under 35 U.S.C. § 103(a) by arguing (i) that Rice et al. and Yamaguchi fail to disclose a processor that controls the operation of a switching element in association with an operational or differential amplifier based upon an indication of an alternator current level, and (ii) that there is no suggestion to combine or modify Rice et al. and Yamaguchi within either of those references to arrive at the Applicants' invention.

In response to these arguments, the Examiner stated in paragraphs 8 and 9 of the final Office Action:

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. . . . In this case, Rice et al teaches the used of feedback resistors and amplifiers and Yamaguchi provides a way for improving amplifications errors in an operational amplifier. . . . In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., a processor using a differential amplifier and the operational amplifier intended to provide different levels of amplification) are not recited in the rejected claims(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims.

The Applicants respectfully disagree with the Examiner's conclusions in this regard. However, in order to further clarify the Applicants' position, the Applicants have amended claim 1 to include an additional limitation providing that "the signal indicative of the alternator current level provided to the input resistor and the level of alternator current indicated at the output are related by a first gain when the switching element is closed and are related by a second gain when the switching element is opened". The Applicants respectfully submit that this amendment does not add new matter (see, e.g., page 17, line 25 through page 18, line 13 of the Specification). Additionally, the Applicants respectfully submit that this amendment is only being made to clarify the language of the claim rather than for reasons substantially related to the patentability of the claim, since the original claim language already recites an operational amplifier circuit with the switching element for switching an adjustment resistor in parallel with a burden resistor, which would thereby change the gain of the operational amplifier circuit.

Therefore, in contrast to the Examiner's comments in paragraph 9 of the final Office Action, the Applicants respectfully submit that each of the pending independent claims 1, 11 and 14 clearly recites a processor/processing means that is in combination with a differential/operational amplifier intended to provide different levels of amplification. Further, the Applicants respectfully reiterate their arguments from the previous Office Action, namely, that the Applicants are unable to find any disclosure, within either Rice et al. or Yamaguchi, of a processor controlling a switching element in association with an amplifier to change the amplifier's amplification.

book
le
lent
le
lent

Although Yamaguchi appears to disclose a switching element coupled between input and output terminals of an operational amplifier, the Applicants are unable to find any disclosure of a processor controlling the operation of that switching element. As for Rice et al., the Examiner recognized and stated that this patent does not disclose a switching element in parallel with a resistor that are coupled between input and output ports of an operational amplifier. That is, Rice et al. apparently fails to disclose usage of an operational amplifier involving a variable gain (notwithstanding column 2, lines 1-3 of Rice et al., which was referenced by the Examiner in the final Office Action). Because Rice et al. apparently fails to disclose an operational amplifier with a switching element between its input and output ports, Rice et al. further fails to disclose a processor that controls operation of such a switching element.

Additionally, in contrast to the pending claims 1, 11 and 14, neither Rice et al. nor Yamaguchi appears to disclose a processor that controls the operation of a switching element to vary the amplification of an operational/differential amplifier based upon an indication of a current level from an alternator. Rice et al. apparently fails to disclose an operational amplifier with a switching element between its input and output ports. Consequently, Rice et al. further fails to disclose a processor that controls operation of such a switching element based upon a current level from an alternator. The Applicants also are unable to find any disclosure within Yamaguchi teaching that the switching of the switching element should be controlled based upon a current level from an alternator. Indeed, the Applicants are unable to determine within Yamaguchi any particular basis for controlling the switching element.

Therefore, for at least these reasons, the Applicants respectfully submit that Rice et al. and Yamaguchi, both alone and in combination, fail to disclose all of the limitations of pending claims 1, 11 and 14.

With respect to the Examiner's comments in paragraph 8 of the final Office Action, the Applicants respectfully submit that (despite the Examiner's comments) the teachings of Yamaguchi and Rice et al. are insufficient to suggest the necessary combination and modification of the references to arrive at the Applicants' invention. Yamaguchi does not suggest any application of its circuit with respect to alternators. Indeed, the Applicants are unable to find within Yamaguchi any indication that its operational amplifier circuit is intended to provide different levels of amplification for any purpose. Rather, Yamaguchi appears to presume the existence of an operational amplifier circuit with a switching element between the input and output terminals of the operational amplifier, and provides an improvement whereby the ON resistance of that switching element does not negatively affect the gain of the amplifier (see the Abstract of Yamaguchi).

Consequently, in order for the Applicants' pending claims to be obvious in view of Yamaguchi and Rice et al., there must be a teaching or suggestion within Rice et al. that it would be appropriate to use a circuit such as that shown in Yamaguchi in order to make it possible to measure varying levels of output current of an alternator.

Yet the Applicants are unable to find any such teaching within Rice et al. Specifically, the operational amplifier circuit in Rice et al. that was identified by the Examiner (shown in Fig. 10 of the patent) operates to monitor an instantaneous difference between return and feeder currents

that are provided to the two input terminals of the operational amplifier (see col. 10, lines 44-53). This operational amplifier circuit entirely lacks a switching element between input and output terminals of the operational amplifier, because the operational amplifier circuit is not intended to provide two different ranges of amplification or gain. Rather, the operational amplifier circuit is intended to provide an indication when there is an imbalance between the return and feeder currents of the generator, and thus provide ground fault detection (see col. 10, lines 57-67). To summarize, the Applicants are unable to find within Rice et al. any suggestion to use an operational amplifier circuit in conjunction with a switching element in order to switch the amplification of a signal indicative of an alternator current, so that alternator currents at a wide variety of levels can be accurately sensed.

Consequently, because Rice et al. and Yamaguchi fail to disclose all of the limitations of pending claims 1, 11 and 14, and because these references lack a suggestion to combine or modify the references to arrive at the Applicants' pending claims 1, 11 and 14, the Applicants respectfully submit that these claims are allowable under 35 U.S.C. § 103(a). Further, the Applicants respectfully submit that each of pending claims 3-10, 12-13 and 15-21, which respectively depend from claims 1, 11 and 14, also are allowable over the cited prior art references.

* * *

Conclusion

In view of the amendments to the claims and the Remarks being submitted herewith, and in view of the distinctions

between the presently claimed subject matter and the teachings of the cited references, the Applicants respectfully request reconsideration and allowance of the present application.

The Applicants wish to invite the Examiner to telephone the Applicants' attorney at the number listed below if discussion with the Applicants' attorney would be of assistance to the Examiner or further the prosecution of the present application.

Respectfully submitted,
David A. Hintz et al.

Dated: August 14, 2002

By: 
John T. Pienkos
Reg. No. 42,997
QUARLES & BRADY
411 East Wisconsin Avenue
Milwaukee WI 53202-4497
(414) 277-5777

VERSION SHOWING CHANGES TO CLAIMS

1. (Amended) A system for sensing alternator current levels, the combination comprising:
 - an operational amplifier having an input and an output;
 - an input resistor connecting the input to a signal indicative of an alternator current level;
 - a feedback resistor connected between the input and the output;
 - an adjustment resistor and a switching element coupled in series between the input and the output, in parallel with the feedback resistor; and
 - a processor coupled to the output and being operable, based upon a current indication related to a level of alternator current indicated at the output, to control the operation of the switching element such that the switching element is closed when the current indication increases to exceed a first threshold, and such that the switching element is opened when the current indication decreases to fall below a second threshold, wherein the signal indicative of the alternator current level provided to the input resistor and the level of alternator current indicated at the output are related by a first gain when the switching element is closed and are related by a second gain when the switching element is opened.